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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Birch Stewart Kolasch & Birch LLP
P O Box 747
Falls Church, VA 22040-0747

EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

RL

Office Action Summary

Application No.

09/667,596

Applicant(s)

SONG ET AL.

Examiner

HOAN C. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7-10, 13, 16-18, 21- 24, 27-31 is/are rejected.
- 7) ☒ Claim(s) 3-6, 11, 12, 14, 15, 19, 20, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cited feature "wherein the drain electrode part has a smaller area than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode" in claim 9 must be shown or the feature(s) canceled from the claim(s). The drain electrode part 42A/46A/50A with a contact hole 44/48/52 (Fig. 3-5) does not have smaller area than the drain electrode part 36A (Fig. 2) without a contact hole. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cited feature of "the pixel electrode overlaps a gate lines less than if the protective layer included a contact hole over a storage electrode part of the metallic pattern" in claim 18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cited feature “a thin film transistor (TFT) selectively electrically connecting one of the data lines to the pixel electrode” and “storage capacitor having a storage electrode and a drain electrode and being connecting to pixel electrode” in claim 21 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The cited feature “wherein the drain electrode part has a smaller area than (that without contact hole?) if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over the drain electrode” is contradicted with the specification, in which the drain electrode part

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42A/46A/50A with a contact hole 44/48/52 (Fig. 3-5) has greater area than the drain electrode part 36A (Fig. 2) without a contact hole.

6. Claim 21 (amended) is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The cited features of "a thin film transistor (TFT) selectively electrically connecting one of the data lines to the pixel electrode and including a source electrode connected to the one of the data lines" and "storage capacitor having a storage electrode and a drain electrode and being connecting to pixel electrode." The source electrode and drain electrode will be shorted- circuit because they both are connected to the pixel electrode.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With the cited feature of "a protective layer step does not form the protective layer with a contact hole exposing the drain (source?) electrode part of metallic pattern," there is no connection between the pixel electrode and the drain electrode; therefore, the device can not function.

8. Claim 31 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one

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skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With the cited feature of "a protective layer step does not form the protective layer with a contact hole exposing the storage (source?) electrode part of metallic pattern," there is no connection between the pixel electrode and the storage electrode; therefore, the storage capacitor of device cannot function.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 1, 2, 7-10, 13, 16-18, 21- 23 and 27-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US5982467A).

According to claims 1, 2, 7-10, 13, 16-18 and 21, Lee (Figs. 3 and 4a-f) discloses a liquid crystal display (LCD) device comprising:

- a plurality of gate/signal lines 113 formed on a substrate 111;

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- a plurality of data/source lines 123 insulating from and intersecting the gate lines, the data lines and intersecting gate lines defining a plurality of cells, at least one cell including:
- a pixel electrode formed metallic pattern connecting the storage electrode to the drain electrode (claim 22).
- a thin film transistor (TFT) selectively electrically connecting to one of the data lines and one of gate lines defining the cell, including a source electrode connecting to one of the data lines 123 (col. 6, lines 22-23), a gate electrode 117 connected to one of the gate lines;
- a storage capacitor (Fig. 4d) having storage electrode 119;
- a metallic pattern (Fig. 4d) having drain electrode 137 of TFT and storage electrode 119 of the storage capacitor (col. 6, lines 14-15) and being electrically connected to the pixel electrode 139 (col. 6, 43-46); wherein metallic pattern is spaced a predetermined distance from the data line via the gate insulating layer 129;
- a protective layer 135 disposed between the pixel electrode and the metallic pattern,

wherein the pixel electrode is connected to a storage electrode part of metallic pattern via a first contact hole in the protective layer without including contact hole over a drain electrode (claims 7 and 8), and the drain electrode part has a smaller area than if the drain electrode part was electrically connected to the pixel electrode via a contact hole in the protective layer over

the drain electrode (claim 9); the pixel electrode 139 has a larger aspect ratio than (expanding further into TFT region) if the drain electrode part was electrically connected to the pixel via a contact in the protective layer over the drain electrode (claim 10)

or

wherein, in the different forming process, the pixel electrode is connected to a drain electrode part of metallic pattern via a contact hole in the protective layer without concluding contact hole over a storage electrode (claims 16 and 17), and the pixel electrode overlaps a gate lines (Fig. 3) less than if the protective layer included a contact hole over a storage electrode part of the metallic pattern.

According to claims 23, 27-31, Lee (Figs. 3 and 4a-f) discloses a method of manufacturing a TFT substrate comprising:

- forming a plurality of gate/signal lines 113 having gate electrode on a transparent/glass substrate 111 (Fig. 4b);
- forming a gate insulating layer 129 on the gate electrode (Fig. 4c);
- forming a semiconductor layer 131/133 on the gate insulating layer (Fig. 4c);
- forming a data/source line 123 having a source electrode 127, and a metallic pattern (Fig. 4d) having drain electrode part 137 of TFT and storage electrode part 119 of the storage capacitor;

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- forming a semiconductor 133 (Fig. 4d) over at least a portion of one of the gate electrodes, at least a portion of one of the source electrode, and at least a portion of the drain electrode part (col. 6, lines 13-14);
- forming a protecting film 135 (Fig. 4e) over the entire surface with a first contact hole 175 (exposing the storage electrode part of the metallic pattern (claim 27), and a second contact hole exposing the drain electrode part of the metallic pattern (claims 29 and 30)
- forming a pixel electrode 139 over the protective film (col. 6, 43-46);

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US5982467A) as applied to claims 1 and 23 above and in view of Kim et al. (US6100953A).

Kim et al (Figs. 9A-10B) disclose the metallic pattern having a drain electrode 9 of TFT and storage electrode 43 (Fig. 10B) wherein the metallic pattern 43 is spaced a predetermined distance from the data line 3 (Fig. 7A) for avoiding parasitic capacitance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a LCD device or method of

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manufacturing a TFT substrate as Lee disclosed with the metallic pattern formed a storage electrode is spaced a predetermined distance from the data line 3 for avoiding parasitic capacitance.

Allowable Subject Matter

11. Claims 3-6, 11, 12, 14, 15, 19, 20, 25 and 26 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

Lee (US6088072A) published July 2000 discloses a metallic pattern (Fig. 4d) having drain electrode 137 of TFT and storage electrode 119 of the storage capacitor (col. 6, lines 14-15) and being electrically connected to the pixel electrode 139; wherein metallic pattern is spaced a predetermined distance from the data line via the gate insulating layer 129. However, Lee does not teach the metallic pattern being overlapped with a portion of a periphery of the pixel electrode.

Kim et al. (US 5995175 A) published November 1999 disclose the storage electrode formed at periphery of the pixel electrode (Figs. 7, 9-11), which also serves as the storage electrode (Fig. 12); However, Kim et al. do not teach the metallic pattern forming drain and storage electrodes being overlapped with a portion of a periphery of the pixel electrode.

Therefore, claims 3-6, 11, 12, 14, 15, 19, 20, 25 and 26 contain the allowable subject matter since there is no prior art teach a LCD device wherein the metallic

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pattern forming drain and storage electrodes is overlapped with a portion of a periphery of the pixel electrode.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703)306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SIKES L WILLIAM can be reached on (703)308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703)7468178 for regular communications and (703)308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

chn
January 8, 2002


William L. Sikes
Supervisory Patent Examiner
Technology Center 2800